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ASSIGNMENT BOOKLET 1A

MAT3037 Pure Mathematics 30
Module 1: Section 1 Assignment

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Date Assignment Submitted: ____________________

Time Spent on Assignment: ____________________

(If label is missing or incorrect)

Student File Number: ____________________

Module Number: ____________________

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Assigned Teacher: ____________________

Assignment Grading: ____________________

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Student's Questions and Comments

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Teacher's Comments

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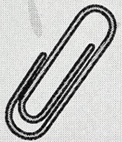
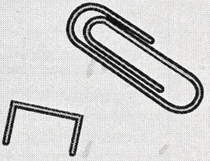
Pure MATHEMATICS 30

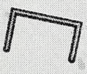


Module 1

Transformations

ASSIGNMENT BOOKLET 1A





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Summary

	Total Possible Marks	Your Mark
Section 1 Assignment	40	

Teacher's Comments

Pure Mathematics 30
Module 1: Transformations
Assignment Booklet 1A
Section 1 Assignment
Learning Technologies Branch
ISBN 0-7741-2641-8

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Students	✓
Teachers	✓
Administrators	
Home Instructors	
General Public	
Other	

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ASSIGNMENT BOOKLET 1A
PURE MATHEMATICS 30: MODULE 1
SECTION 1 ASSIGNMENT

This Assignment Booklet is worth 40 marks out of the total 100 marks for the assignments in Module 1. The value of each assignment and each question is stated in the left margin.

Read all parts of your assignment carefully and record your answers in the appropriate places. If you have difficulty with an assignment, go back to your Student Module Booklet and review the appropriate activity. Be sure to proofread your answers carefully before submitting your Assignment Booklet.

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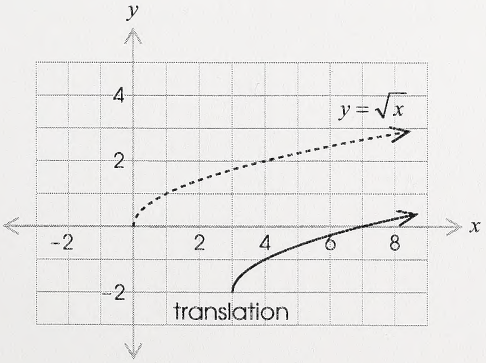
Section 1 Assignment: Transformations

Clearly show how you arrived at your answers by showing your work.

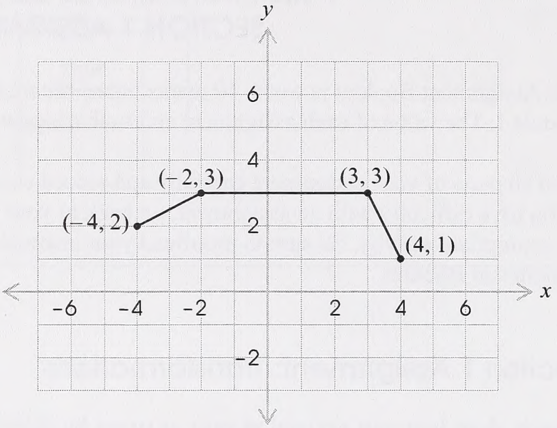
① **1.** Describe how the graph of $y - 2 = f(x)$ can be obtained from the graph of $y = f(x)$.

① **2.** Explain how the graphs of $y = f(x)$ and $y = f(x + 4)$ are related.

② **3.** The graph of $y = \sqrt{x}$ and a translation of this graph are shown. Write the equation of the translated graph.



② **4.** **a.** The graph of $y = f(x)$ is shown. On the same grid, graph $y + 2 = f(x - 2)$.



① **b.** Explain how you obtained the graph in 4.a.

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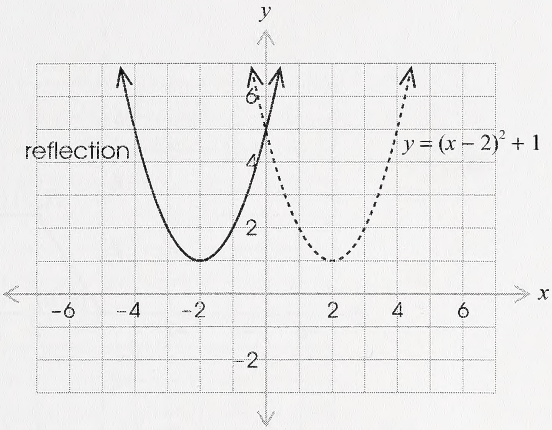
③ **5.** A horizontal translation is applied to the graph of $y = x^3 + 2$ so that it will pass through (3, 10). What is the new equation of the graph?

6. The graphs of $y = (x-2)^2 + 1$ and its reflection in the y-axis are given.



①

a. What is the equation of the reflected graph?

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①

b. Explain how the equation of the reflected graph can be obtained by applying a horizontal translation to the graph of $y = (x-2)^2 + 1$.

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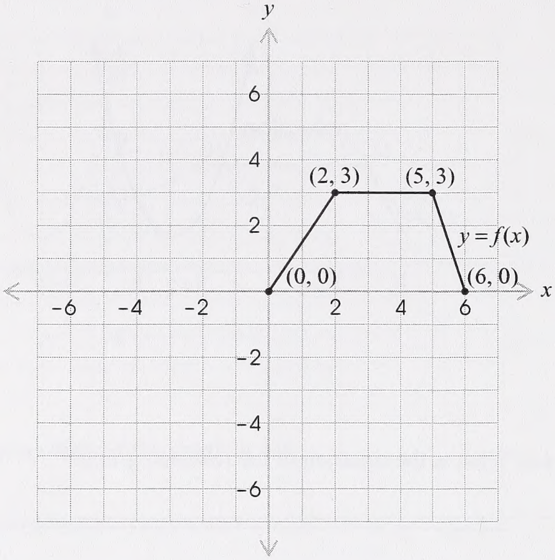
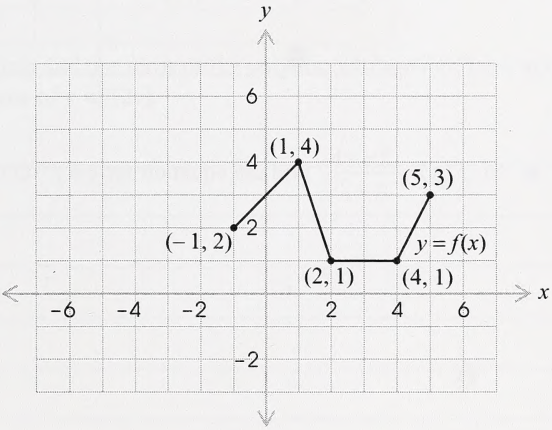
④ **7.** Draw the graphs of $y = -f(x)$ and $y = f(-x)$ on the same grid as $y = f(x)$. Clearly identify each graph.



② **8.** **a.** How are the graphs of $y = x^2 - 3x$ and $y = 3x - x^2$ related? Justify your answer.

② **b.** What points do the graphs of $y = x^2 - 3x$ and $y = 3x - x^2$ have in common? Explain.

② **9. a.** Draw the graph of $x = f(y)$ on the same axes as $y = f(x)$.



① **b.** How are the graphs of $y = f(x)$ and $x = f(y)$ related?

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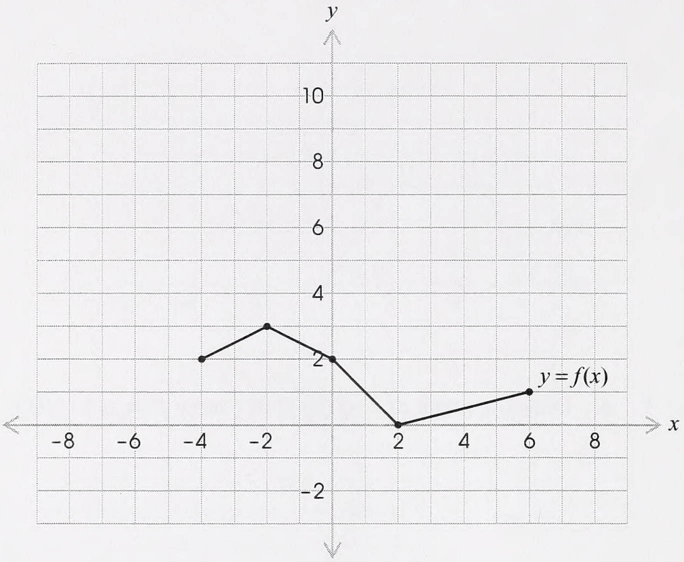
④ **10.** Draw the graphs of $y = f(2x)$ and $y = 3f(x)$ on the same grid as $y = f(x)$. Clearly identify your graphs.



② **11. a.** If $f(x) = \dfrac{2x+1}{x+2}$, find the equation for $y = f^{-1}(x)$.

① **b.** On which line do points that are common to the graphs of both functions in 11.a. lie?

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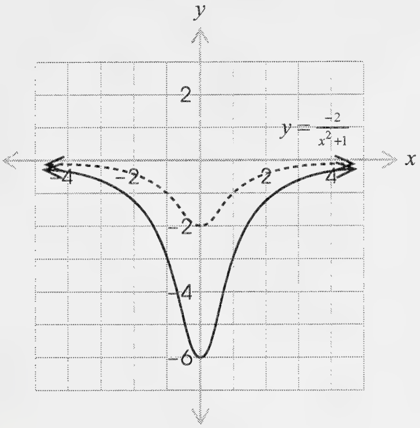
② **12.** The graph of $y = \dfrac{-2}{x^2+1}$ has been stretched to obtain a second graph. What is the equation of the second graph? Justify your answer.



③ **13.** Use transformations and the zeros of the polynomial function $f(x) = x(x-4)(x+2)$ to determine the zeros of $y = f(2x)$.

14. The graph $y = x^3 - 4x^2 + x + 6$ is stretched horizontally by a factor of 2 about the line $x = 4$.

③ **a.** What is the resulting equation?

① **b.** Using a graphing calculator, determine the zeros of the original equation. (Round your answer to 4 decimal places if required.)

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① **c.** Using a graphing calculator, determine the zeros of the transformed equation. (Round your answer to 4 decimal places if required.)

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ASSIGNMENT BOOKLET 1B

MAT3037 Pure Mathematics 30
Module 1: Section 2 Assignment and Final Module Assignment

FOR STUDENT USE ONLY

Date Assignment Submitted: ____________________	(If label is missing or incorrect) Student File Number: ____________________
Time Spent on Assignment: ____________________	Module Number: ____________

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Assigned Teacher: ____________

Assignment Grading: ____________

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Date Assignment Received:

Student's Questions and Comments

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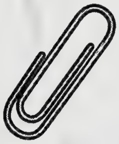
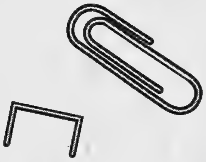


Module 1

Transformations

ASSIGNMENT BOOKLET 1B



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Summary

	Total Possible Marks	Your Mark
Section 2 Assignment	35	
Final Module Assignment	25	
	60	

Teacher's Comments

Pure Mathematics 30
Module 1: Transformations
Assignment Booklet 1B
Section 2 Assignment and Final Module Assignment
Learning Technologies Branch
ISBN 0-7741-2642-6

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Home Instructors	
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Other	

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ASSIGNMENT BOOKLET 1B
PURE MATHEMATICS 30: MODULE 1
SECTION 2 ASSIGNMENT AND FINAL MODULE ASSIGNMENT

This Assignment Booklet is worth 60 marks out of the total 100 marks for the assignments in Module 1. The value of each assignment and each question is stated in the left margin.

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(35)

Section 2 Assignment: Graphing

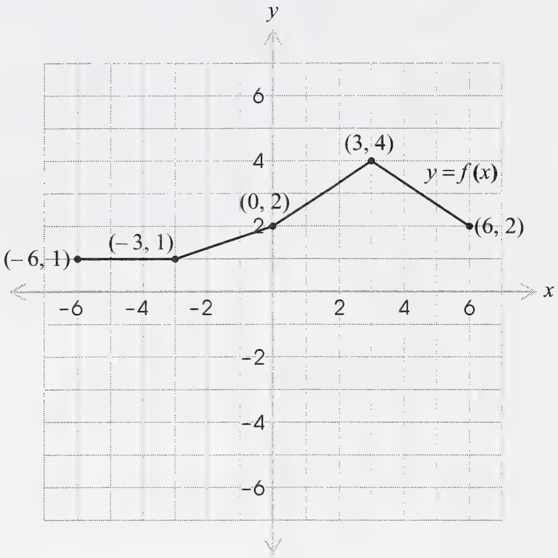
Clearly show how you arrived at your answers by showing your work.

1. Describe how the graph of each of the following functions can be obtained from the graph of $y = f(x)$.

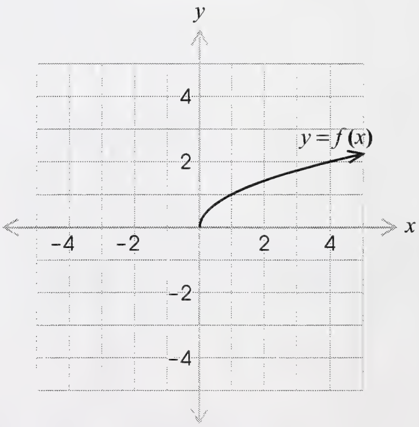
④ **a.** $y = -2f(x-1)+3$

④ **b.** $y = 2f(-3x+12)$

④ **2.** The graph of $y = f(x)$ is shown. On the same set of axes, graph $y = f(3x) - 2$.

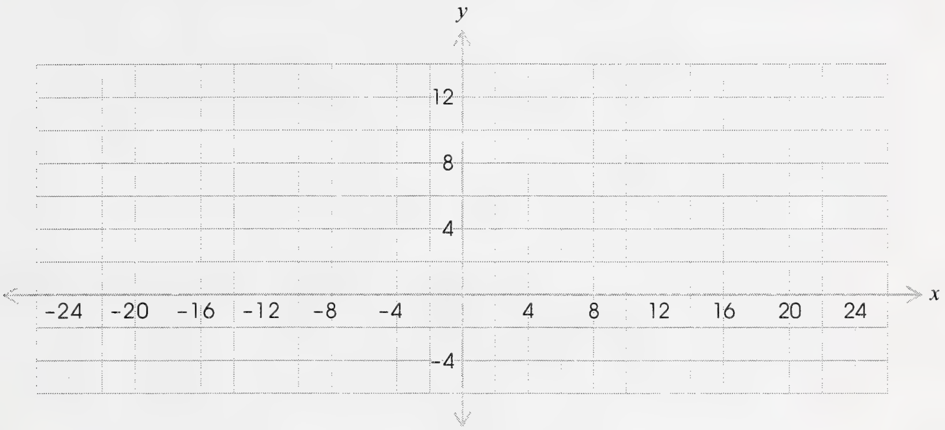


④ **3.** Given $f(x) = \sqrt{x}$, draw the graph of $y = -2f(-x + 3) + 1$ and describe the transformation $f(x)$ undergoes.



4. The cross section of the roof of a house is modelled by the function $y = -\frac{5}{12}|x-12|+5$, where $y \geq 0$.

③ **a.** Graph the function.

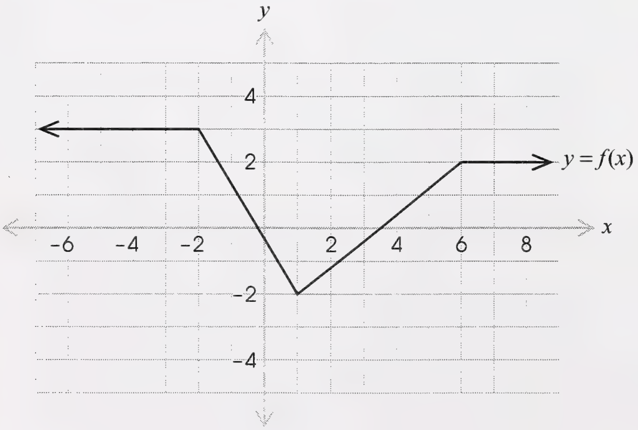


③ **b.** Find the height and length of each side (including the base) of the isosceles triangle.

④ **c.** What transformations must be applied to the graph of $y = |x|$ to obtain the graph of $y = -\frac{5}{12}|x-12|+5$, where $y \geq 0$?

④ **5.** The graph of $f(x) = |x|$ is stretched vertically by a factor of $\frac{1}{2}$, then reflected in the x-axis, and then translated 4 units to the right and 5 units down. Write the equation of the transformed function, $y = g(x)$.

⑤ **6.** Using the graph of $y = f(x)$, draw the graph of $y = \frac{1}{f(x)}$ on the same axes.



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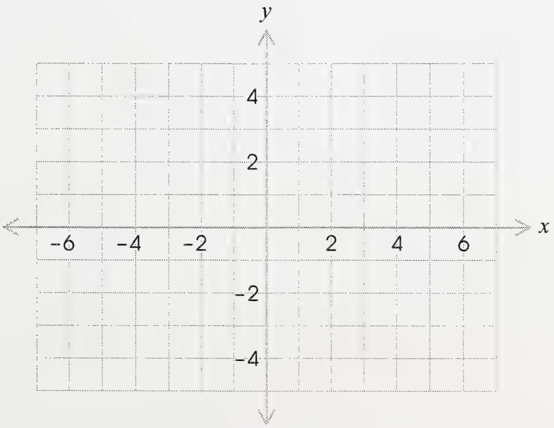
Final Module Assignment

Clearly show how you arrived at your answers by showing your work.

③ **1.** Describe how the graph of $y = f(-2x + 6) + 7$ can be obtained from the graph of $y = f(x)$.

③ **2.** The graph of $f(x) = x^3$ is stretched horizontally by a factor of 2, then reflected in the y-axis, and then translated 3 units to the left and 1 unit down. Write the equation of the transformed function, $y = g(x)$.

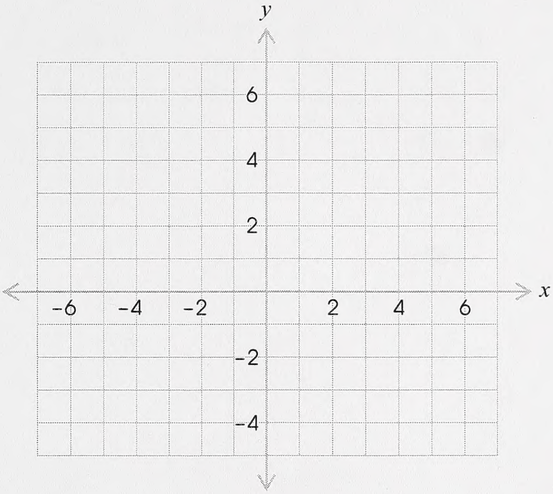
④ **3.** **a.** Draw the graphs of $f(x) = x^2 - 4x$ and $g(x) = \frac{1}{f(x)}$ on the same grid.



④ **b.** Explain how the graph of $f(x) = x^2 - 4x$ can be used to obtain the graph of $y = g(x)$.

②

4. **a.** Draw the reflection of $f(x)=\sqrt{x-2}$ in the line $y=x$.



③

b. Write the equation of the reflection in the form $y = g(x)$.

①

c. Is $y = g(x)$ a function? Justify your answer.

③ **5.** The graph of $y = -x^3 - 3x^2 + 6x + 8$ has been stretched vertically by a factor of 2 about the line $y = 2$.

a. What is the resulting equation?

① **b.** Using a graphing calculator, determine the zeros of the original equation? (Round your answer to 4 decimal places if required.)

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① **c.** Using a graphing calculator, determine the zeros of the transformed equation? (Round your answer to 4 decimal places if required.)

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